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FOUNDATIONS OF ECONOMIC PROGRESS IN TROPICAL AFRICA

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Thirty-five years ago, we knew practically nothing of tropical Africa, more than ten or twelve miles inland, excepting along a few great rivers and the other routes of pioneer explorers. European traders had few direct relations with the east coast. The western shores were more easily accessible and here were many white men at their stations near the river mouths, engaged in a thriving barter trade. But they did not go inland. Sierra Leone has been a crown colony of the United Kingdom for more than a century, but, twenty-five years ago, its Hinterland was geographically unknown.¹ European enterprise was content to hug the coast though much trade came to it from the interior. Catholic missionaries at Gaboon and Landana, when asked why they did not extend their work into the interior, said they had no resources for traveling inland.² On the broad estuary of the Congo it was thought phenomenal if traders ever ventured as far as the Yellala Falls, some ninety-five miles from the mouth of the river. Trading stations were sometimes attacked and many were kept on a war-footing.

The modern transformation began in 1879 when Stanley was sent by the African International Association, with King Leopold at its head, to make a practical study of the Congo plateau, above the 235 miles of cataracts, for purposes of possession and exploitation. In the following year,

¹"A Transformed Colony." Sierra Leone as it was and as it is, etc. By T. J. Alldridge. J. B. Lippincott Company, Philadelphia, 1910. p. 17.

²La Revue Congolaise, vol. 1, no. 2, 1910, Brussels. p. 179.

Brazza ascended the Ogowe River, making treaties with the chiefs and starting the foundation of the French Congo. This was the initiation of the partition of tropical Africa among the colonial powers of Europe. To this appropriation of the greater part of the second largest continent was given some semblance of formality by over 2,000 treaties to which the marks of as many important chiefs were affixed.

Each of five densely peopled and prosperous countries of Europe eagerly sought all it could get of these new lands.³ Each wanted colonies (1) as sources of supply of foodstuffs and of raw materials for the industrial enterprises of the mother land; (2) as reliable, oversea markets for home manufactures; (3) as possible, ultimate areas of settlement for superfluity of the home population. We know to-day that, in the first two respects, the acquirement of tropical African colonies by European powers will be a most profitable investment; and that the third ambition, to secure lands where many of the home people may begin life anew under the flag of their fathers, will be realized to a small extent.

The evidence is now ample to justify these great enterprises in Africa. Germany has observed that the total export and import trade of her once decried colony of German East Africa with about 10,000,000 population amounted, in 1908, to \$10,000,000; and that in the same year, the value of her total trade relations with China, with over 300,000,000 population, was also \$10,000,000. We may safely say that, on the whole, the desirable results, both material and humanitarian, of this mighty colonial movement, in the first thirty years of its existence, have far surpassed expectations; that tropical Africa seems destined permanently to contribute far more to the wealth of the world than, in our ignorance, we dared to expect; that the good in African peoples which Livingstone claimed for them, exists and is being developed; and that the vast white spaces on the maps of a generation ago, are found to be filled with potentialities that will give wide influence, a great future to tropical Africa.

³Belgium, France, Germany, Great Britain, Italy.

The seven colonial powers in tropical Africa finally found themselves in possession of about 7,088,000 square miles of territory, an area more than twice as large as that of the United States. Scarcely a square mile had been surveyed. There were no maps to give intelligent direction to effort. Almost nothing was known of the climatic variations over this vast expanse, of the hydrographic régime, of the distribution of forests, grazing lands, minerals and other resources. Could the whites so far master problems of tropical hygiene that they might sojourn there in a fair state of strength? Would the natives work for them? Hundreds of questions such as these were constantly arising and they had to be answered. There could be little economic development unless they were answered. The attempt will be made here to show some of the facilities which the whites are providing for their work, the partial solution of their problems, and the material progress now manifest as the result of long experience and study.

Exploration, in detail, has made wonderful progress, but its completion, in so vast an area, will require many future decades. By the collaboration of many hundreds of officials and specially detailed or independent observers, a good working knowledge, however, has been obtained of large and very numerous districts which are most conveniently situated for early development. Some of these districts embrace the most of whole colonies or protectorates as Togo, Sierra Leone, and French West Africa; but we should add that in each of these districts there may be large areas, of forests, for example, that have not yet been explored.

These studies, on the whole, cover the ground that should always be covered by those who come after the pioneer explorer; in other words, a large proportion of the published results are the work of expert investigators, put in the field by governments or societies who require reliable data. The topics treated embrace all phases of tropical Africa that are of special interest now, in the work of development, including tropical hygiene. A considerable number of monographs and books which embody the essence of all that has been learned in one or another field of study are constantly appear-

ing. As an illustration, we may cite the Austrian botanist Franz Thonner, who has published a work of 673 pages and 150 plates describing all the species of flowering plants that are now known in Africa and its islands. Of course, the great variety and the volume of carefully collected information, now in print, is invaluable for the manifold enterprises under development.

It may be very trite to say that "Maps are a short cut to geographical knowledge;" but, in our country, where there is little general appreciation of the great helpfulness of good maps, the idea seems to require iteration. The leaders in the movement to transform tropical Africa realized that it would be worth all it might cost to produce good maps of the new possessions. The result is that, for more than a quarter of a century there has been incessant pushing of surveys and map-making; so that, to-day, we may get a good idea, from maps, of the distribution of the natural and cultural features of tropical Africa including, on many maps of fairly large scale, a great deal of detailed information. Of course, these maps are not all of equal value; many of them are based merely upon reconnaissance surveys; but fortunately, so many astronomical points have now been fixed throughout tropical Africa that it is very often convenient to tie to them surveys of all kinds for map-making purposes. Most of the frontiers of the African colonies have now been surveyed and delimited which is very helpful to other mapping because they supply so many fixed points of latitude and longitude.

The many scores of survey parties, whether for boundary or other purposes, have contributed very largely to our knowledge because many of them were explicitly instructed carefully to collect and record all the information they could gather about the geography, the rock formations, the vegetation, the peoples, resources, etc. of the countries through which they passed. The German report on the joint British-German survey for the delimitation of the boundary between Victoria Nyanza and Kilimanjaro was a delight to those who appreciate definite, reliable information about new lands. The governor general of the vast French Congo

declared a year ago, that the reports on itinerary surveys were too summary to be of the highest usefulness in completing the map of the colony; and he issued an order that survey parties should collect and coördinate series of facts relating to geology, hydrology, meteorology, ethnography, botany, statistics, etc., all of which, as he said, are of prime importance in the development of the French Congo.

This supplementary idea has been added to most of the schemes of map-making. Hundreds of map sheets, therefore, give a good, general idea of the nature of the economic development for which each region mapped seems best adapted. These maps, accordingly, are of prime importance in the shaping of new enterprises.

The many maps which the French have produced in the Sahara are topographical itineraries, with astronomical points fixed so that there has been large rectification of positions assigned by the earlier explorers to oases, wells, settlements and routes. Trigonometrical surveys have also been made of important oases. Some grazing areas and cultivable lands have been discovered and outlined in the middle and south of the Sahara. Few military expeditions have been richer in geographical results than that which the French have recently led against the warrior class who preyed upon the pastoral people of Mauritania. A map was constructed of the whole area traversed so that another white space in Africa has been filled with map detail. The British have shown in Kordofan that, though the best maps must be based upon triangulation, still a map may be made that is most useful and informing though not strictly accurate from a cartographic standpoint.

In a concise reference to the mapping of tropical Africa, which is of great importance in development work, only a few of the most conspicuous features can be mentioned. Dr. Gruner has said of the fine ten sheet map of Togo, on a scale of 1:2,000,000, or 3.1 statute miles to an inch, that even on this comparatively large scale it was impossible to show all the accurate topographic detail collected. This map was in preparation for about ten years; and, as in all the German maps based upon detailed surveys, accurately

determined data are carefully differentiated from less exact information, by the color scheme and other devices.

The Togo map and the other German maps of large parts of German East and Southwest Africa and the Cameroons are among the very best products of the kind that have ever been made in new lands. They give an incomparably more accurate idea of the regions they represent than we could possibly derive from any map of the western part of the Balkan Peninsula, published twenty years ago. The official German Colonial Atlas, printed in 1897, is so completely out of date, that new sheets are being issued embracing the large amount of cartographic material now available.

The French map product also maintains a high standard. The sheets, in colors, of the colonies, on which the Colonial Office has generalized the enormous amount of survey material collected, are among the best maps of recently explored parts of the world. Both the British and French governments are also issuing map sheets on a scale of 1:1,000,000, containing the results of the latest information on the areas covered.

Comparatively little new map work has been done in the Portuguese and Spanish territories; and it must suffice here merely to refer to the very serviceable cartographic output of the Belgian Congo and other colonies. The present status of map work has made possible, within the past few years, the production of good economic maps showing climatic and topographic variations, the distribution of great forests, swamps, dry areas, plains, highlands, minerals and other export products, the extent of navigation etc. All these maps are preliminary and imperfect but they represent the great progress in our knowledge of Africa; and about 100 new map sheets are issued every year to supplement and improve them. Though Africa is the last of the continents to be opened to enterprise, this great event has occurred in an era that in many ways, and not least in the production of good maps, is facilitating more rapid development than was possible in any other of the continents.

As in surveys and map making, so also in railroad construction and telegraph installation, tropical Africa, in the

space of twenty-five years, has far surpassed the record of any other new land in the same length of time. The impossibility of developing the colonies without bringing the great interior areas of production into close relations with the sea by means of railroads was recognized from the first; and a large amount of government and private capital has been invested in these enterprises. Some of them, most notably the Congo Railroad, in the lower cataract region, have, from the first, paid all charges and substantial dividends. Most of them have paid all working expenses and a part of the interest on their obligations. Their record, in these initial days of colonial production, is of splendid augury for their future success.

Reference can be made here only to some of the more important rail routes. The Cape to Cairo Railroad has advanced from Cape Town across the Zambesi at Victoria Falls to Broken Hill, the present terminus of the main line. A branch line to the northwest is now in operation to the copper field of Katanga (Belgian Congo) so that there is continuous rail connection from Cape Town over 2100 miles north. The northern section is now completed to Senaar, on the Blue Nile. On the way south, it will circumvent the swamp region of the White Nile. The whole line (Cape to Cairo) will be about 6,870 miles long and about four-fifths of the distance is now covered by steam routes, rail or river.

The Belgian Railroad Company of the Great Lakes, is just completing its rail routes around the cataracts and rapids of the Upper Congo, so that there will now be uninterrupted steam transportation by water or land, for about 2,250 miles from the mouth of the river to Kalengwe Falls, the extreme limit of navigation. A railroad is to be built from these Falls to Southern Katanga. This mining region will therefore have steam connections with the sea, both at Cape Town, at the mouth of the Congo and at Beira, in Portuguese East Africa.

The foreign trade of the Nyasaland Protectorate has been hampered by the fact that the Shire River is impassable for most craft during the dry months, (April-December). This

impediment has now been obviated by a railroad in operation between Port Herald and Blantyre, the capital of the Protectorate.

Speke was about a year and Stanley eight months in reaching Victoria Nyanza from the Indian Ocean. A governor of German East Africa has now left his capital at Dar es Salaam, traveled by steamer to Mombasa, thence by the Uganda Railroad to Victoria Nyanza, then by steamer around the entire coast, stopping at every German station and in Uganda, and back to his capital, about a month after he left it.

The upper and middle Niger is now connected at three points with the sea by steam transportation. The French are running trains from Kayes, the head of navigation, on the Senegal River, to Bamako on the Niger, connecting with the little steamers for Timbuktu, on the edge of the Sahara; so that the time from Timbuktu to France, if close connections are made, is nineteen days. The Senegal however, in the dry season is not navigable. The French are therefore constructing a railroad from Dakar, their leading port in Senegal, to Kayes, in order to secure uninterrupted steam service between the Atlantic and Timbuktu. The same government has completed a railroad across its colony of French Guinea from Konakry, the chief port, to Kurussa on the Upper Niger, and have thus two steam routes to that river. The third railroad to the Niger, further south, is a British enterprise, now in operation between Lagos and Jebba, with results so remarkable that if the figures for the last three months, of 1910, correspond with those of the previous nine months, the receipts for that year will be about \$500,000 over and above the operating expenses. It will take some time to bridge the Niger at Jebba, but the railroad is advancing rapidly beyond the river and it will be completed in less than three years to Kano the leading commercial center of the Central Sudan, and will pass through the great cotton area of Northern Nigeria; with a branch running to Bauchi, now said to be one of the greatest future sources of the world's tin supply.

The native labor question involves perplexities but it is

moving towards solution. Nearly all of tropical Africa is for the blacks, not for white colonists. The natives themselves must supply the manual labor which development requires. The whites will direct the important enterprises but unless the native furnishes the brawn and sinew, the work will not be done. So the colonial policies have long been formulating around the idea that the negro is essential to prosperity, an indispensable constituent in the agencies of wealth production and that all efforts to build up thriving colonies without him will fail.

The labor question has been much obscured by writers who have drawn sweeping deductions from what they have seen in very limited areas. Many natives are not yet willing to work longer than is necessary to procure the few things they wish to buy. Some West African merchants, one day, thought they would stimulate rubber production by offering a higher price for it. To their surprise, the supply fell off. The natives found that at the higher price, they could satisfy their immediate wants by sending less rubber to market. Many such instances have been used to fortify the idea that the native African will not work unless you flog him to his task. This is an untenable proposition. The British know it and their laws rigidly forbid any form of enforced native labor in their African territory. The Germans have learned it and the early proposal to establish forced labor in German East Africa has never been carried out. There are many tribes such as the Wakikuyu, of the British East Africa highlands, who are, persistently, hard workers. A little familiarity with the idea that hard work will bring more comfort has turned tens of thousands of natives to habits of industry. When the Congo enterprise began, Stanley could not induce the natives to work for him. He sent to Zanzibar and to Liberia for labor. But before the railroad was built around the Congo cataracts, 40,000 of these Congo men were in the portage service. About 4000 of the Congoese have long been at work building the stretches of railroad around sections of the upper river rapids. They have not only graded the roadbed and laid the rails, but they have also burned lime and made brick and built

the stations along the new route; for one of the prominent purposes of the whole colonial régime in tropical Africa is to give industrial education to many natives so that they may better help themselves and render more effective service to the whites. Both governments and missionary societies are enlisted in this work and nowhere with better results than in the Belgian Congo where these trained blacks are not only locomotive firemen but engineers as well; where they partly man the government printing office and have become good carpenters, cabinet makers and masons; and native tailoresses make garments on sewing machines for the thousands of black police, soldiery and workmen.

The Handbook of the Nyasaland Protectorate says that native labor is plentiful, except in the rainy season, when the people are busy on their farmlands and will work freely for the whites only at higher wages. In some of the colonies the natives are developing an ambition to till land for the profit they can make from the sale of their products. In 1908, the tribes near Victoria Nyanza sold for export over the Uganda Railroad, 1412 tons of grain, 1207 tons of potatoes and pineapples, and 359 tons of beans; and their sales in each line of farm products are increasing every year by hundreds of tons. We may cite another still more striking instance from the Gold Coast, West Africa. Only a few years ago, cacao was experimentally raised in the Botanical Gardens, and eighty pounds were exported, the first export from that colony of the commodity that gives us chocolate and cocoa. In 1907, the exports were 21,000,000 pounds and every pound was the product of native agriculture. The feeling is now strong that in British West Africa, as far as agriculture is concerned, the best line of development will be in the encouragement and training of the native farmer.

It may be long before the average native attains his best efficiency as farmer or wage earner, but the tendency, on the whole, is towards improvement. The main fact is that throughout the colonies, the black man is selling to the whites a tremendous total of manual service, and more of it every year; in addition, he pays a tax to help support the govern-

ment under which he lives. In his report for 1909, Mr. Swann, of the Nyasaland Protectorate, says that the native tax, in only one of his collection districts, yielded \$125,000 in that year. In some colonies, the natives complain that they are not getting sufficient return for the tax they pay. In the French Congo, the annual tax is \$1 per individual, and the Catholic missionaries say that the government is doing nothing to improve navigation or the native roads to markets and is leaving the support of schools and hospitals entirely to the missions. On the whole, however, the white governments, including the French colonies, are carrying out wisely devised plans for native education, elementary of course, and particularly strong along industrial lines.

Such unspeakable outrages upon the natives as those in the Abir and one or two other rubber concessions in the Belgian Congo, are a thing of the past. To the concessionary companies was given, stupidly or wickedly, not only the exploitation of rubber in the fields assigned to them, but also absolute control over the black population in the conceded territories, regardless of the laws of the Congo State which, if enforced, were ample for native protection. We have heard of the remarkable fortunes of the little island of São Thomé in the Gulf of Guinea, 31 miles long and 19 miles wide, whose cacao exports, in ten years, have amounted to \$68,000,000; and that this story of the wonderful bounty of São Thomé is marred by the fact that the labor recruiting system of Portuguese Angola, practically reduces the men and women who work on these island plantations, to a state of slavery. We hear now that the Portuguese law of July 17, 1909, is expected to end this disgraceful condition.

We may expect any week now to be able to hear over-night from Timbuktu, on the southern Saharan edge. The whole world is now in touch with the Congo, the great lakes, the Zambesi River, by telegraph. Tropical Africa is being brought nearer and nearer to the civilized nations and it is becoming more and more difficult to subject natives to a policy of systematic abuse without arousing protests that will be effective.

While tropical Africa can never become a home for mil-

lions of the white race there are a few areas where good lands stand so high above the sea that temperate influences prevail. To these regions white immigration is already invited, to some extent, and they are destined to become the homes of many thousands of white toilers whose enterprises will include the raising of European cereals, good cattle and good breeds of sheep both for meat and wool. These lands include a large area in British East Africa where the plain gradually and steadily rises inland, as it does from Omaha to the Rocky Mountains, so that, at Nairobi, 327 miles from the port of Mombasa, the elevation is 5450 feet above the sea, in the Kikuya country to the north and west, from 4500 to 6500 feet and west of the Mau Escarpment from 6000 to nearly 8000 feet. On this high plateau of British East Africa, white settlers, stock-raisers and farmers have already taken up over 1,000,000 acres much of it divided into large ranches, though there are a considerable number of small farmers. This great region adapted for white laborers includes some of the expansive game reserves where, under the law, game cannot be hunted except by special permit which is seldom granted. The whites say, that on account of the enormous quantity of big game, they find it almost impossible to maintain fences; also that where millions of antelopes, zebras and other grazing animals can fatten on these wide grass lands, great numbers of cattle and sheep would thrive. There is a general feeling that the government should cease to extend its protection over game in immense regions that are capable of development. Colonel Sir James Sadler, governor of the colony, said in a recent speech that game preservation must not be permitted to impede the development of the country by white settlers and that changes in the game laws in this particular, were under consideration.

German East Africa has a fine section of these fertile highlands in the neighborhood of Mounts Kilimanjaro and Meru, where many German, Greek and other peasants are already settled and also several hundred Boers from the Transvaal. These Boers, like their fathers, are skilful and hardy pioneers. They have introduced the ox-wagon into

the colony. Most of them are living on the extensive grass plains of the Meru district. The more well-to-do have covered considerable areas with maize, beans, wheat, white potatoes, fruits and vegetables and also comparatively large cattle and sheep raising. Others farm on a smaller scale with a few score of cattle and 200 or 300 sheep. Ostrich farming has begun, alfalfa is one of the new crops and beef is preserved for home consumption by drying.

Another splendid area in German East Africa for future European settlement is the high plateau of Ruanda in the northwest corner of the colony. The government has not yet organized this province.

The area which the Belgian Congo offers to white settlers comprises about 40,000,000 acres in High Katanga, between 10 degrees S. Lat. and the southern and eastern frontiers of the colony. The land is about 4900 feet above the sea with a mild and salubrious climate closely resembling that of Southern Rhodesia where white settlers are constantly arriving. This area is in the highly mineralized part of Katanga and the agricultural opportunities are probably inferior to those of the other tropical highlands; but white colonists are now moving into this region. The largest number of white settlers in any of the new colonies, will probably be found, ultimately, in the southern part of German Southwest Africa, but this region is south of the southern tropic. No common man is fitted for the tremendous work of taming these wildernesses. The pioneer must have the sternest qualities, the greatest fortitude and endurance. No ordinary immigrant is accepted by the governments inviting immigration. The settler, also, while liberally assisted by government, must go provided with some means of his own.

But what of the thousands of white men who must live under intense tropical conditions, planning every phase of the material evolution of these countries and of the training of the negro for the most effective service? We may say, at least, that the terrible mortality that accompanied the initiation of this work is not witnessed to-day. The great progress in the study of tropical hygiene, the abolition, for

the most part, of tinned foods, the supply at most stations of fresh meat and of European vegetables, the accessibility of medical attendance, the care that is widely taken to provide the whites with spacious, well ventilated houses, with ample shade, vegetable and flower gardens, bath houses in many cases, books and papers and in other ways to minister to their comfort and well being—all these influences have helped greatly to decrease the death rate; so that it is now reasonable to expect that a strong, healthy man may maintain fair health and energy for his two or three years of enlistment and that, after a good rest in a milder climate, he will return to the work with new vigor.

The material results of all this exploration, experimentation and study have been very great; and greater still, the countless lessons learned that will go very far to give the right impetus, the proper direction and the efficient method in all the future work. In view of the facts that the governmental régime had to be organized and the plant provided from the ground up, while, at the same time, a vast amount of exploration and of fundamental development work was carried on and is still in progress, it is not surprising that government expenditures still exceed the revenues; but the disparity between them is decreasing. I may here give a fact or two indicative of the trend of the commercial movement. The following import figures do not include imports for government purposes but only foreign commodities sold to the population. The export figures wholly represent colonial products sold in foreign markets.

The imports of the little Togo colony of Germany in 1898 were worth \$757,000; in 1908, \$2,127,000.

The exports of Togo, in 1898 were worth \$503,900; in 1908, \$1,703,000.

The imports of German East Africa in 1898 were worth \$4,213,000; in 1908, \$6,446,000; exports in 1898, \$1,498,000; in 1908, \$2,718,000.⁴

⁴The total import and export trade of French West Africa doubled in the ten years ending in 1908. *Statist. du Commerce des Colonies Françaises, pour l'Année 1908, Tome premier, Paris, 1910. p. 108.* The imports of the

It was announced in 1899, that Uganda was just beginning to have a little foreign trade, but I have seen no statistics for that year. In 1908, the imports were worth \$1,855,000; exports \$735,000, and this in the midst of the terrible sleeping sickness.

We may refer briefly to some other facts momentous in their bearing upon the future economic value of tropical Africa.

It may surprise many to know that European vegetables are successfully grown especially at altitudes of 1,000 feet or more. It has taken time to learn just when to plant and how to care for them; but nearly all of our garden truck grows well in most parts of tropical Africa, even in the clearings of the Great Forest where government posts are established.⁵

Africa is without doubt a source of maize for European consumption. It is one of the new export crops. A shipload of it was taken from British East Africa in the fall of 1910. It is already exported in considerable quantities from the colonies north of the Gulf of Guinea.

The Handbook of Nyasaland, says that pears, peaches and possibly plums seem likely to succeed above 3000 feet of elevation, if carefully attended.

Twelve years ago the European powers began anxiously to scan the colonial field, for regions under their flags that would supply them with cotton. There is no doubt to-day that Africa is the great future reserve for cotton. A large part of British East Africa is well adapted for this crop. In Nyasaland, American upland is a commercial success and is the variety now recommended. German East Africa, which has large areas adapted for cotton, is now importing

five colonies constituting French West Africa, amounted in 1908 to \$21,718,093; exports \$18,500,189.

The imports of the six British West African colonies in 1904 were valued at \$28,690,000; in 1908, \$37,595,000. Exports in 1904, \$25,330,000; in 1908, \$35,225,000.

⁵In Commandant Delhaise's 'Les Warega.' (XX and 376 pp., Albert De Wit, Brussels, 1909), the author gives an interesting account of clearings in the great tropical forest in the eastern part of the Belgian Congo where the soil is well adapted for the production of many crops and European vegetables of all kinds are raised at the colonial stations.

seed from American upland grown in Nyasaland as the plant thrives better there than that from seed imported from our country. Large tracts are under cotton culture in Uganda. The natives have taken kindly to the industry, and without European supervision are preparing the land, sowing the seed, and bringing a raw material to market that for length of staple and general quality compares favorably with any cotton in the world. In 1908, four years after the first experimental efforts, the Uganda crop was sold for \$250,000. In West Africa, the cotton product of Togo, in 1909, showed an increase of 32 per cent over the previous year. The experts who for some years have been studying the prospects of cotton in Northern Nigeria, assert that there are 24,000,000 acres in the colony which will grow the quality of fiber that Lancashire requires. If this is correct, Nigeria has three-fourths as much land adapted for cotton raising, as the United States devoted to that crop in 1909.

Sisal hemp, of which Yucatan is now the greatest source of supply, is doing so well in German East Africa that the planters complain that the facilities for shipping their fibre from the important port of Tanga, are inadequate. Wheat is growing in the highlands of Angola, British East Africa, and in Angoni Land (Nyasaland) and it is estimated that tropical Africa will produce enough wheat for all the whites living in that region. Rice in several of the West Africa colonies is declared to be fully equal if not superior to the Bengal article.

For ten years the best breeds of European cattle have been taken to Africa for the improvement of the native cattle with the result that in some tropical regions more milk and better beef per animal is now attained; but, on the whole, the experiment has not been very successful for the mixed breeds are quite susceptible to disease. It is so important, however, that these food resources should be in adequate supply for the whites that the experiments are continued. One of the latest phases is the importation of a breed of Zebu cattle from India, famous both for milk and meat to cross with the native stock. Millions of sheep will be raised among the highlands of tropical Africa, for wool as well as for meat.

The experiments with wool sheep on the high plateaus of British East Africa, have been most encouraging for the future of the industry.⁶

The study given in the past thirty years to the question of the capacity of tropical Africa, to add largely to the wealth of the world, and thereby enhance her own well-being, has conclusively proven that this vast region has enormous resources of great variety that only await exploitation; and that the tremendous outlay of brain and capital that is now and will be invested in the work of development, will not be able, for generations to come, to arrest the loss of natural wealth that cannot now be garnered. The total of essences, oils, forest growths, etc., that decay and perish every year for lack of care or collection, will long continue to exceed in amount the value of all the industrial enterprises now opening.

⁶A very encouraging view of the wool industry in the British East Africa Protectorate is given by Major Schlobach in the *Deutsche Kolonialzeitung*, vol. 27, July, 1910, pp. 500-2. He says that the crossing of Shropshire or Lincoln sheep from England with the South African merino has proven very successful on these highlands of British East Africa; also that sheep from Cape Colony, imported into British East Africa are yielding heavier fleeces than in their native home.